Table 2-1

SAMPLE INFORMATION SUMMARY
ALDER GOLD AND COPPER COMPANY INTEGRATED ASSESSMENT
TWISP, WASHINGTON

Project Sampling Location	Parameter/Limits	Design Rationale	Sampling Design Assumptions	Sample Selection Procedures[a]	Measurement Classification	Non-Standard Method Validation[b]
Groundwater (Domestic and Municipal wells)	pH (Field Screening) / NA Turbidity / NA	Determine WQP using on-site methods	Local domestic wells are representative of groundwater conditions	Collected from residential and municipal wells	Critical for engineering purposes	Manufacturers directions and method requirements
	TAL metals / CRDL	Determine presence of hazardous substances	Local domestic and municipal wells are representative of groundwater conditions	Collected from residential and municipal wells	Critical	NA
	Anions / NA; Silica / NA; TOC / NA; TSS / NA; Hardness / NA; TDS / NA; Arsenic Speciation / NA; Pesticides / CRQL; Carbonate & Bicarbonate / NA	Determine WQP, and engineering parameters	Local domestic and municipal wells are representative of groundwater conditions	Collected from residential and municipal wells	Critical for engineering and water characterization purposes	Per Method
Groundwater (Monitoring wells)	TAL metals / CRDL	Determine the presence of hazardous substances	Residual contamination exists from past operations and has migrated to groundwater	Collected from monitoring wells	Critical	NA
	Anions / NA; TDS / NA; Carbonate & Bicarbonate / NA	Determine WQP	Local monitoring wells are representative of groundwater conditions	Collected from monitoring wells	Critical for water characterization purposes	Per Method
Surface Water	TAL metals / CRDL	Determine the presence of hazardous substances	Residual contamination exists from past operations and has migrated to surface water	Collect from nearby surface water	Critical	NA
Sediment	TAL metals / CRDL & PRGs	Determine the presence of hazardous substances	Residual contamination exists from past operations and has migrated to sediment	Collect from nearby sediment	Critical	NA
Surface soil	TAL metals / CRDL & PRGs	Determine the presence of hazardous substances	Residual contamination exists from past operations and has migrated to surface soil	Collect from mill building, tailings ponds, residences, and background locations	Critical	NA

Subsurface soil	TAL metals/CRDL & PRGs	Determine the presence of hazardous substances	Residual contamination exists from past operations and has migrated to subsurface soil	Collect from tailings ponds and background location	Critical	NA
	Geotechnical / NA SPLP (TAL metals / NA; Anions / NA; TDS / NA; Carbonate & Bicarbonate / NA)	Determine engineering parameters and characterize tailings pond leachate	Residual contamination exists from past operations and has migrated to subsurface soil	Collect from tailings ponds	Critical for engineering and leachate characterization purposes	Per method

[a] Sample locations will be determined from on-site observations and historical information.

[b] Data will be validated based on the laboratory statement of work QC limits and laboratory and method QC limits.

Key:

CRDL = Contract-required detection limit.
Critical = Required to achieve project objectives or limits on decision errors.
CRQL = Contract-required quantitation limit.
Geotechnical = Soil Classification, Shear stress, and California Bearing Ratio.
NA = Not Applicable.
Pesticides = Chlorinated pesticides.
PRGs = Preliminary Remedial Goals.
QC = Quality control.
SPLP = Synthetic precipitate leaching procedure.
TAL = Target Analyte List.
TDS = Total dissolved solids.
TSS = Total suspended solids.
TOC = Total organic carbon.
WQP = Water quality parameters.

Table 2-2

SAMPLE ANALYSES SUMMARY
ALDER GOLD AND COPPER COMPANY INTEGRATED ASSESSMENT
TWISP, WASHINGTON

Location	Matrix	Number of Samples Collected[a]	Analytical Parameters and Method (or equivalent method)	Sample Preservation	Technical Holding Time[b]	Sample Container(s)
Onsite and near site Onsite and near site	Surface Soil	up to 13	Target Analyte List metals (CLPAS) ILM04.1	Cool to 4°C ± 2°C	180 days from collection (28 days for mercury)	One 8-oz wide-mouth glass jar with Teflon-lined lid
	Subsurface Soil	up to 9	Target Analyte List metals (CLPAS) ILM04.1	Cool to 4°C ± 2°C	180 days from collection (28 days for mercury)	One 8-oz wide-mouth glass jar with Teflon-lined lid
		up to 4	SPLP: Target Analyte List metals (SW-846) 1312 and 6000 and 7000 Series	Cool to 4°C ± 2°C	180 days from collection to extraction 180 days from extraction to analysis (28 days for mercury)	One 8-oz wide-mouth glass jar with Teflon-lined lid
			SPLP: Inorganic Anions / EPA Method 300	Cool to 4°C ± 2°C	48 hours from collection to analysis or 28 days from collection to analysis	One 125-mL polyethylene bottle
			SPLP: Carbonate, Bicarbonate / USGS Method	Cool to 4°C ± 2°C	TBD	TBD
			SPLP: Total Dissolved Solids / EPA Method 160.1	Cool to 4°C ± 2°C	7 days from collection to analysis	One 1-L polyethylene bottle
		2	Soil Classification / ASTM D2487	Cool to 4°C ± 2°C	TBD	TBD
		2	Shear Test / ASTM D3080	Cool to 4°C ± 2°C	TBD	TBD
		2	California Bearing Ratio / ASTM D1883	Cool to 4°C ± 2°C	TBD	TBD
	Sediment	up to 4	Target Analyte List metals (CLPAS) ILM04.1	Cool to 4°C ± 2°C	180 days from collection (28 days for mercury)	One 8-oz wide-mouth glass jar with Teflon-lined lid
	Surface Water	up to 4	Target Analyte List metals (CLPAS) ILM04.1	Cool to 4°C ± 2°C HNO_3 to pH≤2	180 days from collection (28 days for mercury)	One 1-Liter polyethylene bottle
	Groundwater (Domestic and municipal wells)	22	Target Analyte List metals (CLPAS) ILM04.1	Cool to 4°C ± 2°C; HNO_3 to pH≤2	180 days from collection (28 days for mercury)	One 1-Liter polyethylene bottle
		20	Pesticides (CLPAS) OLC03.2	Cool to 4°C ± 2°C	7 days from collection to extraction; 40 days from extraction to analysis	Two 40-mL VOA vials with Teflon-lined septa

		20	Inorganic Anions / EPA Method 300	Cool to 4°C ± 2°C	48 hours from collection to analysis or 28 days from collection to analysis	One 125-mL polyethylene bottle
		20	Carbonate, Bicarbonate / EPA Method 310.1	Cool to 4°C ± 2°C	14 days from collection to analysis	One 250-mL polyethylene bottle
		20	Silica / Method 370.1	Cool to 4°C ± 2°C	28 days from collection to analysis	One 250-mL polyethylene bottle
		20	Total Organic Carbon / EPA Method 415.1	H_2SO_4 to pH ≤ 2; Cool to 4°C ± 2°C	28 days from collection to analysis	One 125-mL polyethylene bottle
		20	Turbidity / EPA Method 180.1	Cool to 4°C ± 2°C	48 hours from collection to analysis	One 125-mL polyethylene bottle
		20	pH / EPA Method 150.1	Cool to 4°C ± 2°C	Immediate	One 125-mL polyethylene bottle
		20	Hardness / EPA Method 130.2	HNO_3 to pH ≤ 2; Cool to 4°C ± 2°C	6 months from collection to analysis	One 125-mL polyethylene bottle
		20	Total Dissolved Solids / EPA Method 160.1	Cool to 4°C ± 2°C	7 days from collection to analysis	One 1-L polyethylene bottle
		20	Total Suspended Solids / EPA Method 160.2	Cool to 4°C ± 2°C	7 days from collection to analysis	One 1-L polyethylene bottle
		3	Arsenic Speciation / EPA Method 1632	Cool to 4°C ± 2°C; HCl to pH≤2	28 days	One 1-L polyethylene bottle
	Groundwater (Monitoring wells)	up to 10	Target Analyte List metals (CLPAS) ILM04.1	Cool to 4°C ± 2°C; HNO_3 to pH≤2	180 days from collection (28 days for mercury)	One 1-Liter polyethylene bottle
		up to 10	Inorganic Anions / EPA Method 300	Cool to 4°C ± 2°C	48 hours from collection to analysis or 28 days from collection to analysis	One 125-mL polyethylene bottle
		up to 10	Carbonate, Bicarbonate / EPA Method 310.1	Cool to 4°C ± 2°C	14 days from collection to analysis	One 250-mL polyethylene bottle
		up to 10	Total Dissolved Solids / EPA Method 160.1	Cool to 4°C ± 2°C	7 days from collection to analysis	One 1-L polyethylene bottle

a The number of samples presented is an estimate; the actual number of samples to be collected will be determined in the field.

b Technical holding times have been established only for water matrices. Water technical holding times were applied to sediment and soil samples where applicable; in some cases, recommended sediment/soil holding times are listed.

Key:

°C = Degrees Celsius.
CLPAS = Contract Laboratory Program Analytical Services.
EPA = U. S. Environmental Protection Agency.
HNO_3 = Nitric Acid.
H_2SO_4 = Sulfuric Acid.
L = Liter.
mL = Milliliter.
oz = Ounce.
Pesticides = Chlorinated pesticides.
SPLP = Synthetic precipitate leaching procedure.
TBD = To be determined.

Table 2-3

QA/QC ANALYTICAL SUMMARY AND FIXED LABORATORY ANALYTICAL METHODS
ALDER GOLD AND COPPER COMPANY INTEGRATED ASSESSMENT
TWISP, WASHINGTON

Laboratory	Matrix	Parameters (Method or equivalent)	Method Description/ Detection Limits	Total Field Samples[a]/ Containers	QA/QC Sample Summary Analyses/Containers				Total Field and QA/QC Analyses/ Containers[d]	Precision and Accuracy
					Trip Blank	Rinsate Blanks[b]	Organic MS/MSD[c]	Inorganic MS/Dup[c]		
Field Analysis	Groundwater	pH (150.1) Turbidity (EPA Method 180.1)	Electrometric/0 - 14 Nephelometric/ 0.1 NTU	20/20 20/20	NA NA	NA NA	NA NA	NA NA	20/20 20/20	NA Per Method
EPA, Region 10, or CLP Laboratory	Groundwater and Surface Water	TAL metals (CLPAS ILM04.1)	AA and ICP/CRDL	36/36	NA	2/2	NA	2/2	40/40	75%-125% +/- 35%
	Groundwater	Pesticides (CLPAS OLC03.2)	GC and ECD/CRQL	20/20	NA	1/2	1/4	NA	22/26	OLC03.2 / OLC03.2
EPA, Region 10, or Commercial Laboratory	Groundwater	Inorganic Anions (EPA Method 300)	Ion chromatography/ 0.1 to 1.0 mg/L	30/30	NA	2/2	NA	2/2	32/32	Per Method
		Carbonate and Bicarbonate (EPA Method 310.1)	TBD	30/30	NA	2/2	NA	2/2	32/32	Per Method
		Silica (Method 370.1)	Colorimetric/2 mg/L	20/20	NA	1/1	NA	1/1	22/22	Per Method
		Total Organic Carbon (EPA Method 415.1)	Combustion/2 mg/L	20/20	NA	1/1	1/1	NA	22/22	Per Method
		Hardness (EPA Method 130.2)	Titrimetric/0.1 mg/L	20/20	NA	1/1	NA	1/1	22/22	Per Method
		Total Dissolved Solids (EPA Method 160.1)	Weight/20 mg/L	30/30	NA	NA	NA	NA	30/30	Per Method
		Total Suspended Solids (EPA Method 160.2)	Weight/10 mg/L	20/20	NA	NA	NA	NA	20/20	Per Method

		Arsenic Speciation (EPA Method 1632)	GC & AA/0.003 ug/L	3/3	NA	1/1	NA	1/1	5/5	Per Method
EPA, Region 10, or CLP Laboratory	Surface Soil and Sediment	Target Analyte List metals (CLPAS ILM04.1)	AA and ICP/CRDL	17/17	NA	2/2	NA	2/0	21/18	ILM04.1/ ILM04.1
EPA, Region 10, or Commercial Laboratory	Subsurface Soil	SPLP [Target Analyte List metals (EPA 1312/6000/ 7000 Series); Inorganic anions (EPA Method 300); carbonate and bicarbonate (EPA Method 310.1); TDS (EPA Method 160.1)]	AA and ICP/1 mg/L Ion chromatography/ 0.1 to 1.0 mg/L TBD / TBD Weight/20 mg/L	4/4	NA	1/1	NA	1/0	6/5	Per Method
		Target Analyte List metals (CLPAS ILM04.1)	AA and ICP/CRDL	9/9	NA	1/1	NA	1/0	11/10	ILM04.1/ ILM04.1
		Soil Classification (ASTM D-2487)	Descriptive/NA	2/2	NA	NA	NA	NA	2/2	NA
		Direct Shear Test (ASTM D-3080)	Stress/NA	2/2	NA	NA	NA	NA	2/2	NA
		California Bearing Ratio (ASTM D-1883)	Strength/NA	2/2	NA	NA	NA	NA	2/2	NA

a The total number of field samples is estimated.

b The total number of rinsate blanks could vary depending on the total number of sample shipments. The sample numbers are based on one rinsate per 20 samples per nondedicated sampling device. Note that rinsate blanks consist of water aliquots for both soil and water field samples.

c No extra volume is required for soil/sediment samples; for water samples, triple volume is required for organic analyses and double volume is required for inorganic analyses. Sample numbers are based on one MS/MSD per 20 samples per matrix.

d Total analyses and containers includes field and QA/QC aliquots to be submitted for fixed laboratory analysis. Note that rinsate blanks consist of water aliquots for both soil and water field samples.

e Includes duplicate, MS/MSD, and field blank samples.

Key:

AA = Atomic absorption furnace technique.
CLPAS = Contract Laboratory Program Analytical Services.
CRDL = Contract-required detection limit.
CRQL = Contract-required quantitation limit.
ECD = Electron capture detection.
EPA = United States Environmental Protection Agency.
GC = Gas chromatography.
ICP = Inductively coupled argon plasma.
ug/L = micrograms per Liter.
ug/L = micrograms per Liter.
mg/L = milligrams per Liter.
MS/DUP = Matrix spike/duplicate
MS/MSD = Matrix spike/matrix spike duplicate.
NA = Not applicable.
NTU = Nephelometric turbidity units.
QA/QC = Quality assurance/quality control
TAL = Target Analyte List.